

## Claims:

- 5 1. A method of assessing an individual's predisposition to a selected calcification condition status, which method comprises determining the genotype of the promoter of the bone sialoprotein gene, the promoter of the matrix gla protein gene, the promoter of the osteopontin gene, or the osteoprotegerin gene, also  
10 known as the osteoclastogenesis inhibitory factor gene (OPG/OCIF), or all four or any combination of two or more out of the four promoters.
- 15 2. A method as claimed in Claim 1, wherein said calcification condition status is having a high or low peak bone mass or having a high or low rate of bone loss.
- 20 3. A method as claimed in Claim 1 or Claim 2, wherein it is determined whether the individual is homozygous or heterozygous for an allelic variation of the promoter of the bone sialoprotein gene, the promoter of the matrix gla protein gene, the promoter of the osteopontin gene or the promoter of the OPG/OCIF gene,  
25 or all four or a combination of two or more out of the four promoters.
- 30 4. A method as claimed in Claim 3, wherein said allelic variation of the bone sialoprotein gene promoter is BSP-A1496G or BSP-G1869A.
- 35 5. A method as claimed in Claim 3, wherein said allelic variation of the matrix gla protein gene promoter is MGP-C242A.
6. A method as claimed in Claim 3, wherein said allelic variation of the osteopontin gene promoter is OPN-G520A or OPN-T1825C.
- 40 7. A method as claimed in Claim 3, wherein said allelic variation of the osteoprotegerin gene, also known as the osteoclastogenesis inhibitory factor gene is OPG-A163G.
- 45 8. A method as claimed in Claim 7, further comprising determining whether the individual is homozygous or heterozygous for an allelic variation of the promoter of the bone sialoprotein gene.

9. A method as claimed in Claim 8, wherein said allelic variation of the bone sialoprotein gene promoter is BSP-A1496G or BSP-G1869A.
- 5 10. A method as claimed in Claim 3, comprising determining whether at least one copy of the bone sialoprotein gene promoter of the individual has adenine or guanine at position 1496 bp or at base 1869 bp, wherein adenine at position 1496 bp and guanine at position 10 1869 bp are associated with a lower peak bone mass.
11. A method as claimed in Claim 3, comprising determining whether at least one copy of the matrix gla protein gene promoter of the individual has cytosine or adenine at position 242 bp, wherein adenine is 15 associated with a higher rate of loss of bone mass.
12. A method as claimed in Claim 3, comprising determining whether at least one copy of the osteopontin gene promoter of the individual has guanine or adenine at position 520 bp or thymine or cytosine at position 20 1825 bp, wherein adenine at position 520 bp is associated with a higher rate of loss of bone mass and thymine at position 1825 bp is associated with a lower bone mass.
- 25 13. A method as claimed in Claim 3, comprising determining whether at least one copy of the osteoprotegerin/osteoclastogenesis inhibitory factor gene promoter of the individual has adenine or guanine at position 163 bp, wherein guanine at position 163 bp is associated 30 with a lower peak bone mass.
- 35 14. A method as claimed in any preceding claim, comprising amplifying a relevant portion of the DNA of a said gene promoter of said individual.
- 40 15. A method as claimed in Claim 14, wherein the sequence of said amplified portion is determined by hybridisation assay or by restriction fragment length analysis.
- 45 16. An oligonucleotide primer for use in amplification of a relevant portion of a said gene promoter.

17. DNA comprising a bone sialoprotein gene, or fragment thereof at least 15 nucleotides in length, in which adenine at position 1496 bp is substituted by guanine, or DNA complementary thereto.
- 5 18. DNA comprising a bone sialoprotein gene, or fragment thereof at least 15 nucleotides in length, in which guanine at position 1869 bp is substituted by adenine, or DNA complementary thereto.
- 10 19. DNA comprising a matrix gla protein gene, or fragment thereof at least 15 nucleotides in length, in which cytosine at position 242 bp is substituted by adenine, or DNA complementary thereto.
- 15 20. DNA comprising an osteopontin gene, or fragment thereof at least 15 nucleotides in length, in which guanine at position 520 bp is substituted by adenine, or DNA complementary thereto.
- 20 21. DNA comprising an osteopontin gene, or fragment thereof at least 15 nucleotides in length, in which thymine at position 1825 bp is substituted by cytosine, or DNA complementary thereto.
- 25 22. DNA comprising an osteoprotegerin/osteoclastogenesis inhibitory factor gene, or fragment thereof at least 15 nucleotides in length, in which adenine at position 163 bp is substituted by guanine, or DNA complementary thereto.
- 30 23. A method of osteoporosis therapy comprising determining a predisposition as claimed in any one of Claims 1 to 22, and administering a medicament to the individual to prevent or treat osteoporosis or to delay the onset of osteoporosis if the individual is predisposed to low peak bone mass or to a high rate of loss of bone mass.
- 35 24. A method of atherosclerosis therapy comprising determining a predisposition as claimed in any one of Claims 1 to 22, and administering a medicament to the individual to prevent or treat atherosclerosis or to delay the onset of atherosclerosis if the individual is predisposed to pathological arterial calcification.
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